I. AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Currently amended)   A method of retrieving channel characteristics of a discrete multi-tone communication Digital Subscriber Line (DSL) channel having a plurality of bins, comprising the steps of:

determining and storing on a per bin basis channel frequency response and noise measurements at a first end of the DSL channel at initialization;

determining and storing a signal-to-noise measurement on a per bin basis at the first end of the DSL channel at show time; and

retrieving the stored determined channel frequency response, noise and signal-to-noise measurements at a second end of the DSL channel.

2.   (previously presented) A method as claimed in claim 1 wherein the first end is a central office (CO) end, and the second end is a customer premise equipment (CPE) end.

3.   (Currently amended) A method as claimed in claim 1 wherein the DSL channel is asymmetrical.

4.   (previously presented) A method as claimed in claim 1 wherein the first end is a customer premise equipment (CPE) end, and the second end is a central office (CO) end.

5.   (Currently amended) A method as claimed in claim 1 wherein the DSL channel is non-overlapping.

6.   (Currently amended) A method as claimed in claim 1 wherein the DSL channel is an Asymmetric Digital Subscriber Line (ADSL) channel.

7.   (Currently amended) A method as claimed in claim 1 wherein the DSL

2

channel is a very high bit-rate DSL (VDSL) channel.

8. -9.   (cancelled)

10.   (Currently amended) An apparatus for retrieving channel characteristics of a
Digital Subscriber Line (DSL) discrete-multi-tone-communication channel having a
plurality of bins, the apparatus comprising:

a first circuit for determining and storing on a per bin basis channel frequency
response and noise measurements at a first end of the channel;

a second circuit for determining and storing a signal-to-noise measurement on
a per bin basis at the first end; and

a first receiver for retrieving the stored frequency response, noise and signal-
to-noise measurements at a second end of the channel.

11.   (previously presented) An apparatus as claimed in claim 10 wherein the first
end is a central office (CO) end, and the second end is a customer premise
equipment (CPE) end.

12.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL
channel is asymmetrical.

13.   (previously presented) An apparatus as claimed in claim 10 wherein the first
end is a customer premise equipment (CPE) end, and the second end is a central
office (CO) end.

14.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL
channel is non-overlapping.

15.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL
channel is an Asymmetric Digital Subscriber Line (ADSL) channel.

16.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL
channel is a very high bit-rate DSL (VDSL) channel.

17. -30. (cancelled)

3

31.   (Currently amended) A storage medium readable by a computer encoding a computer program for execution by the computer to carry out a method for retrieving channel characteristics of a <u>Digital Subscriber Line</u> ~~discrete multi-tone communication~~ <u>(DSL)</u> channel having a plurality of bins, the computer program comprising :

code means for determining and storing on a per bin basis channel frequency response and noise measurements at a first end of the <u>DSL</u> channel at initialization;

code means for determining and storing a signal-to-noise measurement, on a per bin basis at the first end <u>of the DSL channel</u> at show time; and

code means for retrieving the ~~stored~~ <u>determined</u> channel frequency response, noise and signal-to-noise measurements at a second end of the <u>DSL</u> channel.

32.   (previously presented) A computer readable medium as claimed in claim 31 wherein the first end is a central office (CO) end, and the second end is a customer premise equipment (CPE) end.

33.   (Currently amended) A computer readable medium as claimed in claim 31 wherein the <u>DSL</u> channel is asymmetrical.

34.   (previously presented) A computer readable medium as claimed in claim 31 wherein the first end is a customer premise equipment (CPE) end, and the second end is a central office (CO) end.

35.   (Currently amended) A computer readable medium as claimed in claim 31 wherein the <u>DSL</u> channel is non-overlapping.

36.   (Currently amended) A computer readable medium as claimed in claim 31 wherein the <u>DSL</u> channel is an Asymmetric Digital Subscriber Line (ADSL) channel.

37.   (Currently amended) A computer readable medium as claimed in claim 31 wherein the <u>DSL</u> channel is a very high bit-rate DSL (VDSL) channel.

38.   (Currently amended) The method as claimed in claim 1, wherein the <u>DSL</u> channel frequency response ~~at initialization~~, $H_R(f)$ is represented by a normalized complex number $a(i) + jb(i)$.

39,   (Currently amended) The method as claimed in claim 1, wherein the <u>DSL</u>

channel frequency response ~~at initialization~~ is referred to tip and ring of a ~~cooper~~ copper loop.

40.   (Currently amended) The method as claimed in claim 1, wherein the noise measurement ~~at initialization~~ is referred to tip and ring of a ~~cooper~~ copper loop.

41.   (Currently amended) The apparatus as claimed in claim 10, wherein the channel frequency response ~~at initialization~~, $H_R(f)$ is represented by a normalized complex number a(i) +jb(i).

42.   (Currently amended) The apparatus as claimed in claim 10, wherein the channel frequency response ~~at initialization~~ is referred to tip and ring of a copper ~~cooper~~ loop.

43.   (Currently amended) The apparatus as claimed in claim 10, wherein the noise measurement ~~at initialization~~ is referred to tip and ring of a copper ~~cooper~~ loop.

44.   (Currently amended) The method as claimed in claim 1, further comprising the step of analyzing time dependent changes in cross talk levels and line attenuation at the second end of the DSL channel.

45.   (previously presented) The apparatus as claimed in claim 10, further comprising an analyzer at the second end for analyzing time dependent changes in cross talk levels and line attenuation.

46.   (previously presented) The storage medium as claimed in claim 31, further comprising code means for analyzing time dependent changes in cross talk levels and line attenuation at the second end of the channel.

47.   (cancelled)

48.   (Currently amended) A method as claimed in claim 1 wherein the DSL channel is overlapping.

49.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL channel is symmetrical.

5

50.   (Currently amended) An apparatus as claimed in claim 10 wherein the DSL channel is overlapping.

51.   (New)   A method of retrieving channel characteristics of a Digital Subscriber Line (DSL) channel having a plurality of bins, comprising the steps of:
        determining and storing on a per bin basis channel frequency response and noise measurements at a first end of the DSL channel;
        determining and storing a signal-to-noise measurement on a per bin basis at the first end of the DSL channel; and
        retrieving the determined channel frequency response, noise and signal-to-noise measurements at a second end of the DSL channel.

52.   (New) A storage medium readable by a computer encoding a computer program for execution by the computer to carry out a method for retrieving channel characteristics of a Digital Subscriber Line (DSL) channel having a plurality of bins, the computer program comprising :
        code means for determining and storing on a per bin basis channel frequency response and noise measurements at a first end of the DSL channel;
        code means for determining and storing a signal-to-noise measurement, on a per bin basis at the first end of the DSL channel; and
        code means for retrieving the determined channel frequency response, noise and signal-to-noise measurements at a second end of the DSL channel.

53.   (new) A method as claimed in claim 1 wherein the channel is symmetrical.

54.   (new) A method as claimed in claim 1 wherein the channel is overlapping.

55.   (new) An apparatus as claimed in claim 10 wherein the channel is symmetrical.

56.   (new) An apparatus as claimed in claim 10 wherein the channel is overlapping.